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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
RODEE, CHRISTOPHER D	

ART UNIT	PAPER NUMBER
1756	3

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/074,021	AZUMA ET AL.	
	Examiner	Art Unit	
	Christopher D RoDee	1756	

-- Th MAILING DATE of this communication appears on th cover sh t with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-20 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-20 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Interpretation

In examination of the instant application the limitation of a "single layer-type photosensitive layer" is understood to mean that a single photosensitive layer is present rather than a dual layer. As seen in *Organic Photoreceptors for Imaging Systems* to Borsenberger, pp. 28-31, a single photosensitive layer is as depicted as Figure 3 and does not contain separate charge generation and charge transport layers.

Double Patenting

Applicant is advised that should claim 3 be found allowable, claim 4 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claims 3 and 4 contain the same limitations on the linear pressure and the press-contact angle. The sole claimed difference between these claims is the speed at which the image carrier is rotated. This limitation is not a structural limitation on the apparatus or an apparatus component but relates to the manner in which the apparatus is used. As discussed in MPEP 2114, "A claim containing a 'recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus' if the prior art apparatus teaches all the structural limitations of the claim. *Ex*

parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)." Because the structure is the same in claims 3 and 4 they would be properly rejected as substantial duplicates. Any rejection applicable to claim 3 is therefore equally applicable to claim 4.

Claim Objections

Claim 7 is objected to because of the following informalities: the definition of the "R" groups in the formulae are described as "R^{10}, R^{11} are..." and as "R^{20}, R^{21} are...". The "R" groups should be linked by "and" rather than a comma to conform to normal English language usage. Appropriate correction is required.

Claims 8 and 12 are objected to because claim 8 refers back to the general formula [1] but there is no such formula in base claim 6. The formula should be added to claim 8 to remove this objection. Claim 12 is objected to because of its dependence on claim 8.

Claims 9 and 13 are objected to because claim 9 refers back to the general formulae [1] and [2] but there is no such formula in base claim 5. The formulae should be added to claim 9 to remove this objection. Claim 13 is objected to because of its dependence on claim 9.

Claims 10 and 14 are objected to because claim 10 refers back to the general formulae [1], [2], and [3] but there is no such formula in base claim 6. The formulae should be added to claim 6 to remove this objection. Claim 14 is objected to because of its dependence on claim 10.

Claim 15 is objected to because it refers back to the general formula [3] but there is no such formula in base claim 7. The formula should be added to claim 15 to remove this objection.

Claim 16 is objected to because it refers back to the general formula [3] but there is no such formula in base claim 9. The formula should be added to claim 16 to remove this objection.

Claim 18 is objected to because it refers back to the general formula [4] but there is no such formula in base claim 6. The formula should be added to claim 18 to remove this objection.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 7-18 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 5 and 6, from which claims 7-18 depend, state that the image carrier is "a single layer-type photosensitive layer". The meaning of this phrase giving the words their usual and customary meaning is presented above at the top of page 2. The rejected claims refer to a component of "an outermost layer in the photosensitive layer". This limitation indicates that single photosensitive layer has more than a single layer because if there is an outermost layer

there must be some portion of the photosensitive layer other than the outermost layer (e.g., lowermost layer, middle layer, etc.). Rejected claims 7-18 are confusing because base claims 5 and 6 prohibit a plurality of layers in the photosensitive layer yet the rejected claims indicate that a plurality of layers are present. It is unclear how a single layer can have a plurality of layers as now claimed.

Claim 6 and those claims dependent are indefinite because it is unclear which roller is "at the side of the surface to be transferred". No image is present on the rollers so it is not possible for them to transfer an image. Clarification is the written response is requested.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Oshiba *et al.* in US Patent 5,721,085.

Oshiba discloses an image forming apparatus having an organic photosensitive drum **10,** which meets the requirements of a rotatable image carrier, and around the drum a charging means **11**, an exposing means **12**, a developing means **13**, a transferring means **14**, and a

cleaning means as a cleaning blade **19**. The photosensitive drum has a conductive support and a photosensitive layer, which comprises a plurality of charge generation and charge transport layers (Fig. 1; col. 4, l. 53+). As seen in the Examples, these layers are organic photosensitive layers having a binder resin, a charge generation material, and a charge transport material. The blade appears to be an elastic material because it is a resilient urethane plate with a high repulsion resistance (col. 7, l. 9-23), which permits the blade to bend as seen in Figures 3 and 4. With respect to the cleaning blade, contacting weight P, contacting angle Θ and free length l, P=15-20 g/cm, Θ = 15° -25° and l=8-12 mm, are preferable (col. 7, l. 41-43; Fig. 4).

As seen in column 11, beginning at line 8, the blade is loaded into the apparatus to test various photoreceptors and blades. Table 2 shows that the blades all have contact angles between 16° and 20° with loads of 16 to 20 g/cm. Sample 3 is particularly pertinent to the rejected claims.

Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Itami *et al.* in US PAP 2002/0076238.

Itami discloses an image forming apparatus as seen in Figure 2 having a photoreceptor drum **10** and around the drum a charging unit **12**, an exposure unit **13**, a plurality of developing units **14**, a transferring unit **18**, and a cleaning blade **221**, which is part of the cleaning unit **22**. The photoreceptor has a single layer-type photosensitive layer having both charge generation and charge transporting functions (¶ [0134]). The photosensitive layer has a binder resin (¶ [0137]), a charge generation material (¶ [0135]), and a charge transport material (¶ [0136]). The cleaning blade is a polyurethane elastic blade having a contact angle of 20° and a contact pressure of 20 g/cm (¶ [0206]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakoh *et al.* in US Patent 5,114,814 in view of Oshiba *et al.* in US Patent 5,721,085. This rejection is applied in the event the peripheral speed does provide a patentable limitation to the claims.

Sakoh discloses an imaging apparatus having the structure shown in the Figure. This apparatus includes a photosensitive member **1**, a charger **2**, an exposure unit for providing a light beam **3**, a developing device **4**, a transfer unit **5**, a conveyer belt **8** for moving a transfer material, a fixing device **9**, and a cleaner **7** having an elastic cleaning blade **6** (col. 10, l. 10-47; col. 2, l. 52-66). The photosensitive member, which is a rotatable image carrier, is a single photosensitive layer having a charge generating substance and a charge transporting substance dispersed in a binder resin (col. 11, l. 65 - col. 12, l. 2). The photosensitive member is rotated at a speed of 80 mm/sec or higher (col. 11, l. 29-32). Examples 9-12 present specific members that are placed in the apparatus and rotated as speeds of 140 mm/sec or 200 mm/sec, each cleaned by a polyurethane rubber blade at a pressure of 20.0 g/cm (col. 19, l. 1 - col. 20, l. 45). The reference does not specify the angle that the cleaning blade contacts the photosensitive member, but the angle is depicted in the Figure as being an acute angle.

Oshiba as discussed above discloses an apparatus having a similar apparatus to that disclosed in Sakoh comparing the Figures and descriptions of the devices. Oshiba teaches that using an oscillating elastic cleaning blade with an angle of contact of 16° and 20° with loads of

16 to 20 g/cm easily removes toner from the surface of the image carrying member (col. 7, l. 41-43) and gives improved image resolution through a large number of copies (col. 1, l. 53 - col. 2, l. 9).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the oscillating cleaning blade of Oshiba with the noted contact angle as the cleaning blade in Sakoh because Sakoh desires removal of toner particles from the surface of the imaging member without cleaning failure and Oshiba teaches a specific cleaning blade device that aids the removal of the toner from the imaging member's surface.

Claims 1-5, 7, 9, 11, 13, 15-17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Omokawa *et al.* in US Patent 6,451,493 in view of *Organic Photoreceptors for Imaging Systems* to Borsenberger, pp. 6-17, and further in view of Matsuura *et al.* in US Patent 5,604,574.

Omokawa discloses a single layer-type photoconductor having a conductive substrate and a single photosensitive layer that contains a charge generation compound, an electron transporting compound, a hole transporting compound, and a polycarbonate binder resin (Abstract). This photoconductor is positively chargeable and has reduced toner deposition on the surface of the photoreceptor because of the specific binder resin (col. 3, l. 5-27). A "ditry background" problem is reduced. A preferred binder resin is given by the formula spanning columns 8 and 9, which has 85 mol % of the X unit, 14.9 mol % of the Y unit, and 0.1 % of the Z unit. This resin is used in the photosensitive layer in an amount of from 10 to 90 weight %, preferably 20 to 80 weight % (col. 9, l. 61-67). Example 1 produces a photosensitive layer with 52.5 weight % of the resin given by the formula spanning columns 8 and 9. In Example 2, this same resin is mixed with a bisphenol-Z polycarbonate (col. 9, l. 40). The reference states that

the photoconductor can be used in a variety of copier (i.e., imaging apparatus) systems, such as those with laser, LED, or halogen exposure sources, corotron, scorotron, or contact chargers, and one or two-component development systems (col. 17, l. 34-44)

The reference does not disclose the specifics of the apparatus.

Borsenberger discloses the conventional steps in the electrophotographic process as including a charging step, an exposure step, a development step, a transfer step, a fixing step, a cleaning step, and an erasing step (pp. 6-17). Figure 5 depicts a typical apparatus having each of these means located around the periphery of the photoreceptor drum. On page 16, Borsenberger notes that cleaning blades are typically used in the art to remove the residual toner on the photoreceptor after development and transfer.

Matsuura also discloses a typical copying apparatus that uses a drum-shaped photoconductor in Figure 3 (col. 10, l. 34+). The photoreceptor (i.e., photoconductor) used in the apparatus may be one having a single photoconductive layer (col. 4, l. 1-4). The surface layer of this photoreceptor contains polycarbonate resins because it is contacted by an elastic cleaning blade **10** of the apparatus (col. 4, l. 49 - col. 5, l. 42). The loading weight of the blade against the photoreceptor is between 5 and 40 g/cm (col. 8, l. 16-36) while the contact angle is between 10° and 45° (col. 8, l. 32-35). Example 1 uses a cleaning blade with a contact angle of 20° and a loading weight of 18 g/cm.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the photoconductor of Omokawa in the apparatus of Matsuura because Brosenberger's disclosure shows that an apparatus, such as disclosed by Matsuura, is conventionally used to automate the production of copies when photoconductive imaging members are employed. The artisan concerned with the formation of "dirty background" as in Omokawa would look for an automating apparatus taught to minimize residual toner on the

surface of the photoconductor. Matsuura discloses an apparatus that removes residual toner and toner components from the surface of the photoconductor (col. 2, l. 60 - col. 3, l. 11) and that reduces the formation of white and black spots and black streaks formed by residual toner. The artisan would have been expected to optimize the elastic cleaning blade's contact angle and loading weight in order to optimize removal of the toner material from the photoconductor.

Claim 19 is included with this rejection because the wear rate is determined by the manner in which the apparatus is used as evidence by the drum driving time and drum peripheral speed parameters. As noted above, "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus." See *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). Because the combined art discloses and suggests cylindrical drum shaped image carriers, the art addresses the patentable limitations of the apparatus claims. The Examiner suggests that the wear rate limitation be removed from claim 19, as well as claim 20, because it provides no limitation to the claims.

Allowable Subject Matter

Claims 6, 8, 10, 12, 14, 18, and 20 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims and to correct any formal objections presented above.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher D RoDee whose telephone number is 703 308-2465. The examiner can normally be reached on most weekdays from 6 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 703 308-2464. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872-9310 for regular communications and 703 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-0661.

CHRISTOPHER RODEE
PRIMARY EXAMINER

cdr
March 27, 2003